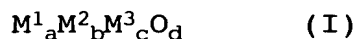


CLAIMS

1. A phosphor comprising a host material composed of a compound having a garnet crystal structure represented by the general formula (I):



wherein M^1 is a divalent metal element, M^2 is a trivalent metal element, M^3 is a tetravalent metal element containing at least Si, a is the number of 2.7 to 3.3, b is the number of 1.8 to 2.2, c is the number of 2.7 to 3.3, and d is the number of 11.0 to 13.0; and

a luminescent center ion incorporated in said host material.

2. A phosphor according to claim 1, wherein the tetravalent metal element M^3 contains Si in an amount of not less than 50 mol%.

3. A phosphor according to claim 1, wherein the divalent metal element M^1 in the formula (I) is at least one element selected from the group consisting of Mg, Ca, Zn, Sr, Cd and Ba.

4. A phosphor according to claim 1, wherein the divalent metal element M^1 in the formula (I) is Mg, Ca or Zn.

5. A phosphor according to claim 1, wherein the

trivalent metal element M^2 in the formula (I) is at least one element selected from the group consisting of Al, Sc, Ga, Y, In, La, Gd and Lu.

6. A phosphor according to claim 1, wherein the trivalent metal element M^2 in the formula (I) is Al, Sc, Y or Lu.

7. A phosphor according to claim 1, wherein the tetravalent metal element M^3 other than Si in the formula (I) is at least one element selected from the group consisting of Ti, Ge, Zr, Sn and Hf.

8. A phosphor according to claim 1, wherein the tetravalent metal element M^3 other than Si in the formula (I) is at least one element selected from the group consisting of Ti, Zr, Sn and Hf.

9. A phosphor according to claim 1, wherein the tetravalent metal element M^3 other than Si in the formula (I) is Ge or Sn.

10. A phosphor according to claim 1, wherein the luminescent center ion is at least one element selected from the group consisting of Cr, Mn, Fe, Co, Ni, Cu, Ce, Pr, Nd, Sm, Eu, Tb, Dy, Ho, Er, Tm and Yb.

11. A phosphor according to claim 1, wherein the

luminescent center ion is at least one element selected from the group consisting of Mn, Fe, Co, Ni, Cu, Ce, Sm, Eu, Tb, Dy and Yb.

12. A phosphor according to claim 1, wherein the luminescent center ion is trivalent Ce.

13. A phosphor according to claim 1, wherein in the formula (I), the divalent metal element M^1 is Ca, the trivalent metal element M^2 is Sc, and the tetravalent metal element M^3 is Si.

14. A phosphor according to claim 1, wherein in the formula (I), the divalent metal element M^1 is Ca and Mg, the trivalent metal element M^2 is Sc and Y, or Sc and Lu, and the tetravalent metal element M^3 is Si.

15. A phosphor according to claim 1, wherein the amount of the luminescent center ion is 0.0001 to 0.3 mol based on a formula weight of the host material compound.

16. A phosphor according to claim 1, wherein when a light emitted therefrom is represented by XYZ color system, a sum of color coordinates x and y is not less than 0.6 $[(x+y) \geq 0.6]$.

17. A phosphor according to claim 1, wherein a brightness keeping percentage of said phosphor is not less

than 90%.

18. A light emitting device comprising the phosphor as claimed in any of claims 1 to 17 as a wavelength conversion material, and a semiconductor light emitting element capable of emitting a light in the range of from ultraviolet light to visible light.

19. A light emitting device according to claim 18, wherein said light emitting device comprises two or more kinds of phosphors.

20. A light emitting device according to claim 18, wherein a general color rendering index R_a of a light emitted from the light emitting device is not less than 80, and a special color rendering index R_s thereof is not less than 90.

21. A display using the light emitting device as claimed in any of claims 18 to 20 as a light source.

22. A lighting system using the light emitting device as claimed in any of claims 18 to 20 as a light source.